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AUTHOR Ward, Blaine E.
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ABSTRACT

A survey of 442 colleges and universities accredited by the National Council for Accreditation of Teacher Education was made to determine how many used microteaching as a training technique in their secondary teacher education programs. One hundred seventy-six indicated that they used microteaching, and 141 of these answered a comprehensive questionnaire. Of the latter group, 72 percent used microteaching in the general methods course, 43 percent in the subject methods course, and 18 percent in student teaching. Seventy-three percent had used microteaching 2 years or less at the time of the survey in 1968-69. About two-thirds of the microteaching programs involved a relatively small number of students (150 or less), and most of the programs used "peer" students in the microclass. There appeared to be a general lack of knowledge about the technical skills of teaching as defined at Stanford; less than a third of the institutions had rationale or had videotaped or filmed models of any of the technical skills. Many respondents who had used microteaching observed an improvement in attitude toward education and in teaching ability both in themselves and in their students. Fifty-four institutions reported contributing directly to the use of microteaching in the inservice education of the state in which they are located. (Author/RT)

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Research and Development Memorandum No. 70

A SURVEY OF MICROTEACHING IN NCATE-ACCREDITED SECONDARY EDUCATION PROGRAMS

Blaine E. Ward

School of Education
Stanford University
Stanford, California

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Introductory Statement

The central mission of the Stanford Center for Research and Development in Teaching is to contribute to the improvement of teaching in American schools. Given the urgency of the times, technological developments, and advances in knowledge from the behavioral sciences about teaching and learning, the Center works on the assumption that a fundamental reformulation of the future role of the teacher will take place. The Center's mission is to specify as clearly, and on as empirical a basis as possible, the direction of that reformulation, to help shape it, to fashion and validate programs for training and retraining teachers in accordance with it, and to develop and test materials and procedures for use in these new training programs.

The Center is at work in three interrelated problem areas: (a) Heuristic Teaching, which aims at promoting self-motivated and sustained inquiry in students, emphasizes affective as well as cognitive processes, and places a high premium upon the uniqueness of each pupil, teacher, and learning situation; (b) The Environment for Teaching, which aims at making schools more flexible so that pupils, teachers, and learning materials can be brought together in ways that take account of their many differences; and (c) Teaching Students from Low-Income Areas, which aims to determine whether more heuristically oriented teachers and more open kinds of schools can and should be developed to improve the education of those currently labeled as the poor and the disadvantaged.

Since the faculty and graduate students in the Stanford Secondary Teacher Education Program originated microteaching in 1963, interest in this teacher training technique has spread rapidly throughout the United States. Dr. Blaine E. Ward of the University of Nebraska followed up his own interest in microteaching by conducting a survey of accredited secondary teacher education programs to determine how many use the method and how they incorporate it into their curricula. He has gathered a useful compilation of facts from his survey results, and has graciously permitted the Center to publish a shortened version of the original report prepared as his doctoral dissertation at the University of South Dakota.

Richard E. Snow
Program Director, Heuristic
Teaching Program

Table of Contents

	Page
Introductory Statement	iii
List of Tables	vii
Abstract	ix
Introduction	1
Definition of Terms	2
Some Uses of Microteaching	2
Findings from the Survey	10
Notes on Research Reviewed	35
Summary and Conclusions	37
Bibliography	41
Appendix A: Technical Skills of Teaching	47
Appendix B: Participating Colleges and Universities	51

List of Tables

Table		Page
1.	Number of NCATE-Accredited Institutions of Higher Education Using Microteaching in Secondary Education.	11
2.	Number of Institutions Using Microteaching in Various Required Courses.	12
3.	Institutions Using Microteaching in Only One Course or Course Combination	13
4.	Institutions Reporting Various Methods of Incorporating Microteaching into the Curriculum	16
5.	Institutions Reporting the Number of Years Microteaching Has Been Used	17
6.	Institutions with Microteaching Programs That Use the Complete Teach-Critique Reteach-Critique Cycle.	18
7.	Institutions Using Various Numbers of Microteaching Encounters in Which Each Student Participates	19
8.	Number of Staff Personnel Involved in the Microteaching Programs.	20
9.	Institutions Using Various Recording Techniques in Microteaching	22
10.	Institutions in Which Selected Personnel Were Involved in the Microteaching Critique During the Tape Replay.	23
11.	Institutions According to Percentage of Time Pupils of the Microclass Are Peer or Real Pupils	24
12.	Institutions Reporting the Number of Pupils in the Microclass.	25
13.	Institutions Reporting the Percentages of Time Microteaching Is Conducted in the Education Department, Audiovisual Department, Campus School, or Public Schools. . .	26
14.	Institutions Reporting Numbers of Videotape Recording Units Used in Each Microteaching Program.	28

Table		Page
15.	Rank of Importance Attached to Each Technical Skill	29
16.	Number of Microteaching Programs That Use Each Technical Skill in the Initial Teach and/or the Teach-Reteach Cycle . .	30
17.	Microteaching Programs That Have Written Rationale, Videotaped Models, or Filmed Models for Each Technical Skill	32
18.	Institutions Reporting Various Observed Changes in Student Attitude Toward Education as a Result of Microteaching. . . .	33
19.	Institutions Reporting Various Changes in Teaching Behavior, Supervision, and Attitudes of Professors as a Result of Using Microteaching	34
20.	Institutions Reporting Various Training Programs for Staff Members in the Use of Microteaching Techniques.	35
21.	Institutions Which Have Contributed Directly to the Use of Microteaching Techniques in In-Service Education in Each State.	36

Abstract

A survey of 442 colleges and universities accredited by the National Council for Accreditation of Teacher Education was made to determine how many used microteaching as a training technique in their secondary teacher education programs. One hundred and seventy-six indicated that they used microteaching, and 141 answered both the original survey and the subsequent comprehensive questionnaire. Of the latter group, 72 percent used microteaching in the general methods course, 43 percent in the subject methods course, and 18 percent in student teaching. Within this group, 104 (73 percent) had used microteaching two years or less at the time of the survey in 1968-69. The general trend has been to incorporate it into the general and subject methods courses by condensing the course content to include it.

About two-thirds of the microteaching programs involved a relatively small number of students (150 or less); most of these provided students with only six or fewer microteaching encounters. A few of the programs, however, provided many teaching encounters.

Most microteaching programs were conducted in the education and audio-visual departments, using "peer" (college) students for pupils of the microclass. However, some institutions conducted their microteaching programs in the campus school or public schools, using "real" pupils for the microclass.

Many of the larger, more mature programs used the complete teach-critique, reteach-critique sequence of microteaching during all or part of the program. Most of the programs used six or fewer pupils for the microclass. In the majority of the institutions, the college student, the supervising professor, and the pupils of the microclass were active in the critique.

There appeared to be a general lack of knowledge about the technical skills of teaching as defined at Stanford; less than a third of the institutions had written rationale, videotaped, or filmed models of any

of the technical skills. There appears to be a need for further study of the technical skills of teaching.

Many responding educators who have used microteaching observed an improvement in attitude toward education and in teaching ability, both in themselves and in their students. Fifty-four institutions reported contributing directly to the use of microteaching in the in-service education of the state in which they are located.

A SURVEY OF MICROTEACHING IN NCATE-ACCREDITED SECONDARY EDUCATION PROGRAMS

Blaine E. Ward
University of Nebraska at Omaha

Increasing interest in the use of microteaching techniques in secondary teacher education programs has made necessary a greater understanding of how microteaching is currently being used. The needs of each secondary education department could be better met if institutions preparing teachers had an awareness of the existing curricular structures and microteaching techniques presently being used.

The author has adapted two forms of microteaching for the secondary education programs at two teacher education institutions. The forms differed because the logistic factors and the curricular structures of the two programs were different. From this personal experience, it seemed likely that there were other variations in the application of the microteaching method from institution to institution.

The purpose of this study was to determine the following:

1. Which universities and colleges accredited by the National Council for Accreditation of Teacher Education were using some form of microteaching in their secondary education programs?

2. What curricular structure for secondary education existed in the above-mentioned colleges and universities?

3. How were the curricular structures modified to incorporate microteaching techniques into these secondary education programs?

4. What modifications were made in the Stanford microteaching process to facilitate its incorporation into the secondary education programs of these institutions?

Chairmen of secondary education departments in the 442 NCATE-accredited colleges and universities in the United States were surveyed to determine which institutions were using microteaching techniques in 1968-1969. Four

hundred and twenty chairmen responded to the initial survey; questionnaires were sent to the 176 who indicated that microteaching techniques were being used in their departments. The 141 who responded to the questionnaire were the major subjects of this study.

Definition of Terms

For the purpose of this study, the terms listed below have been assigned specific definitions. Microteaching is defined as a scaled-down teaching encounter applying clearly defined teaching skills to brief lessons taught to a small group of students. Microlesson refers to a scaled-down, but complete lesson, usually five minutes in length, in the teacher's subject area. Microclass refers to a small class of three to six students to whom a microlesson is taught. Technical skills of teaching are defined as the components or techniques of teaching which are isolated into simple definable segments of teaching. Initial teach refers to the first microteaching encounter using a technical skill for the first time. Reteach is defined as the same, but corrected and modified, microlesson taught at a later time after the initial teach and critique. Critique refers to the evaluation following each initial teach and each reteach encounter. Peer students signifies a group of college students who form the microclass. Real students refers to a group of junior and senior high school students who form the microclass.

Some Uses of Microteaching

Microteaching originated at Stanford University in 1963. Out of the research and study which led up to this event, and from further study since, 19 technical skills of teaching have been differentiated: (1) establishing set, (2) establishing appropriate frames of reference, (3) achieving closure, (4) recognizing and obtaining attending behavior, (5) providing feedback, (6) reinforcement, (7) control of participation, (8) redundancy and repetition, (9) illustrating and use of examples, (10) asking questions, (11) the use of higher-order questions, (12) the use of probing questions, (13) the use of divergent questions, (14) teacher silence and nonverbal cues, (15) student-initiated questions, (16) com-

pleteness of communication, (17) varying the stimulus, (18) lecturing, and (19) pre-cueing (Allen & others, 1967; for definitions, see Appendix A).

In a report to the Multi-State Teacher Education Project, Allen and Young (1967) described the pattern of the microteaching clinic at Stanford University, which has since undergone several changes, but which established the norms for microteaching. The clinic was conducted in the summer prior to the internship in public schools. During the first three weeks of the clinic, interns taught five-minute lessons in teach-reteach sequence with an intervening critique and planning session. Each intern taught two sequences each week. Following a one-week recess, groups of eight interns, all in a subject-matter area, planned a series of 20-minute lessons to be taught during the ensuing three weeks.

In addition to the above, interns taught a diagnostic lesson the first day of the clinic. This was a five-minute lesson on a topic the intern chose from his subject-matter field. Real students were (and are) always used in the microclasses at Stanford University.

The videotape recording of the teaching episode was played back during the critique sessions following each teaching experience. The supervisor selected one teaching behavior, or a maximum of two, for emphasis during the conference. These might be of his own choosing or be predetermined by the organization of the clinic.

As the tape progressed, the supervisor reinforced the teacher for positive instances of the teaching behavior and stopped the tape to point out instances where the teacher could increase or implement certain behaviors. Videotape also provided the facility for reversing the tape and viewing certain sections repeatedly, if the situation demanded it.

The recording also provided a cumulative record of the intern's performance over the course of the summer and throughout the internship.

Each of the regular microteaching sequences emphasized a technical skill of teaching.

Microteaching was used not only in the microteaching clinic, but also during the internship (student teaching) phase of the program. The program was well coordinated in that videotaping was used throughout, which provided the teacher and the supervisor with a common frame of reference for their discussion instead of having to rely on recall alone.

Schaefer and Stromquist (1967) reported that at Eastern Illinois University, microteaching was an integral part of the subject methods instruction. While each instructor varied the format somewhat to suit the special needs of his content area, the general procedure was for each student to prepare a short lesson, three to five minutes, which he presented before the camera to the students in his methods class. After viewing the performance, the student and the methods instructor discussed its strengths and weaknesses. The student then replanned the lesson and repeated it, or parts of it, before the camera, which recorded it on videotape for another viewing.

Men's physical education majors worked in the gym with seventh- and eighth-grade students from the laboratory school, and the camera recorded demonstrations by the novice teacher as well as each pupil's trial and practice of the skill being taught. Mathematics and shorthand majors became aware of their techniques at the chalk board and more cognizant of the value of overhead projectors. Each life science student demonstrated a microscope during his first trial before the camera, as the instructors felt that would be one of each student's first tasks in the classroom. Home economics students made tapes early in the quarter and again as a phase of their final examination at the end of the quarter; as a result, they see visual evidence of their increased competence.

The sequence presented before the camera was short, with the student using material from course content or giving an explanation of some classroom procedure; immediate viewing allowed for immediate feedback and instant evaluation before the student repeated the lesson.

Belt (1967) reported that Brigham Young University is one of the largest teacher training institutions in the country, but is located in

a relatively low population area. There is a constant problem in locating enough student teaching stations for around 500 student teachers each semester. In an effort to alleviate this problem, they tried using microteaching as a possible substitute for part of the student teaching experience.

A typical microteaching session in a secondary methods class, for example, proceeded as follows:

The student teacher, having been scheduled beforehand, prepared to present a four- to eight-minute lesson to a microclass of three to five volunteer local high school students. This brief presentation aimed at teaching a single, specific concept. It was a self-contained lesson and not simply the first few minutes of a longer segment. With the student teacher and the volunteer class were the other members of the trainee's teacher education class and the course instructor. Occasionally, a second instructor was present to assist in the evaluation.

As the student teacher presented his lesson, his performance was recorded on videotape. A television monitor operated during the taping allowed the cameraman to adjust his shooting angle or focus. The instructor-evaluator observed the trainee's teaching effort critically and jotted down suggestions for improvement and commendations. At the conclusion of the lesson, the microclass members and the trainee class completed forms evaluating the trainee's performance.

During the evaluation, the instructor and the trainee discussed the performance in a general, but usually positive, way. The instructor might make suggestions about what to look for during the videotape playback. As the tape was replayed, a particular segment might be replayed or a "stop action" process used if desired. The trainee, the instructor, and the trainee class observed the tape and commented freely. Occasionally, the high school students were invited to participate in the oral evaluation, and interestingly enough, it was often their comments which were seen by the trainees as being most beneficial. Specific suggestions often were made first by the trainee himself. Practice at this point varied depending on the needs of the trainee as perceived by the instructor-evaluator. Some trainees benefitted more from constructive criticism--others from positive reinforcement.

One of the aims of the evaluation session was to prepare the trainee to reteach his lesson. At the conclusion of the discussion and critique, the course instructor and the student teacher decided upon one or two areas of major difficulty on which the student would concentrate in his next presentation. Sometimes the reteach was made immediately after the evaluation; other times it occurred from one day to a week later. The reteaching was always done with volunteer students other than those who participated in the original microclass. This reteach segment was videotaped and all other conditions were as they were for the initial teach. Again, evaluation forms were filled out by the microclass and by the trainee's fellow students. The evaluation of the reteach portion of microteaching was briefer than the initial evaluation--concerned mainly with the particular improvements which the trainee was attempting.

Davis and Smoot (1969) described the Teaching Laboratory at the University of Texas at Austin. Based on the microteaching rationale, the Teaching Laboratory (TL) was designed to be an integral component of the introductory course in teaching taken by undergraduate secondary teacher candidates. Laboratory teaching employed short lessons (five to ten minutes in length) taught to peers. As pupils of the microclass, peers were not instructed to role-play secondary pupils, but rather to be themselves. This basic modification of an asserted principle of microteaching was imperative in the situation in order that the TL component might be incorporated into the program. TL lessons were audiorecorded and the candidates' individual tapes were available in a listening facility as one means of feedback. Other standard feedback procedures included pupil reactionnaires, completed after each lesson, and instructor comments. Central to the TL rationale and practice was a set of technical skills or teaching tasks (e.g., clarifying instructional objectives, questioning, explaining). Usual procedure involved study, discussion, demonstration lesson, and candidates' TL practice with each task during a two-week teach-reteach cycle. During several semesters, the TL component made it possible for candidates to teach ten to twelve microlessons and attend to five or six teaching tasks.

Sedgwick and Misfeldt (1967) reported that the microteaching program at Stout State University was well developed in their American Industries Project in the industrial arts department.

Students enrolled in the professional teacher education sequence were required to participate in microteaching each semester until they had completed the terminal objectives. The criterion was successful attainment of the objectives and not a specified period of time. One teacher trainee might elect to complete the objectives in one or two semesters and another teacher trainee might take six or seven semesters.

The objectives of the American Industries Project were that each teacher trainee would be able to:

1. Develop behavioral objectives for each microlesson.
2. Develop a well-structured lesson plan for each microlesson.
3. Develop a course outline that encompasses the microlesson.
4. Demonstrate successful performance in each technical skill of teaching.
5. Develop a minimum of two behavioral objectives for each level in the cognitive domain of Bloom's Taxonomy of Educational Objectives.

During the first week of each semester, a schedule of available microteaching times was made available to seniors, juniors, sophomores, and freshmen, in that order. Each teacher trainee was able to sign up for microteaching under one of the following options per semester:

1. Sixteen five-minute lessons.
2. Eight 10-minute lessons.
3. Six 20-minute lessons.
4. Four 30-minute lessons.

The teacher trainees were advised to confer with the supervisors to determine which time blocks were most appropriate for the objectives they intended to work on.

The staff at Stout State University felt that distributing the microteaching experiences over the entire program provided realistic integration of academic and professional instruction toward the goal of preparing effective teachers.

Johnson (1968) described the Teaching Techniques Laboratory at the University of Illinois as an augmentation of the subject methods courses and of introduction to education courses. Students enrolled in the methods courses taught six microlessons, and students enrolled in the introduction to education courses taught three microlessons during the semester.

The teaching techniques (i.e., giving directions, inducing methods, discussion methods, and reflective methods) were developed by the Teaching Techniques Laboratory personnel, who as members of the teaching teams taught these skills to the students in regular classrooms.

Each participating student was scheduled for laboratory practice periods 30 minutes long, 10 minutes for the microlesson and 20 minutes for the evaluation by the pupils of the microclass, who recorded their evaluations on the Illinois Teacher Performance Scale. The microclass pupils were college freshmen who were paid $1.50 per hour.

Gilliom (1969) explained how microteaching became an integral, significant feature of the social studies methods course at Ohio State University.

During the first part of the quarter, the students met for a series of soul-searching sessions in which they reexamined their perceived roles as teachers and critically analyzed social studies as typically taught in the secondary schools. Although the topics dealt with prior to microteaching are often considered in methods courses, it was obvious that the students' awareness of the ensuing microteaching added a distinct flavor of reality and urgency to the study. The course's sequence of topics helped to put microteaching in perspective. The topics were: purpose of social studies, nature of the learning process, nature of the student, school setting, nature of social studies content, resources available, components of the teaching act and planning, teaching style, microteaching, and evaluation.

Two classrooms at a local high school were put at the disposal of the methods class during the microteaching experience, and pupil volunteers

were dismissed from study halls in groups of six to sit as microclasses. Six two-hour sessions of the methods class were devoted to microteaching over a three-week period, and during that time, the 20 students in the methods class met at the high school rather than on campus.

Childs (1967) pointed to the possibility that a very significant outcome of microteaching is the prerequisite identification and definition of teaching skills and that this definition of skills improves the caliber of the teacher education program.

Early work employing video processes in teacher education at Wayne State University began some years ago. More recently, videotaping of student teachers has been used for self-appraisal, and for aiding supervising teachers and others to evaluate the work of student teachers.

During the past two years, the university has developed several microteaching activities in fields such as business and distributive education, industrial education, secondary science education, and in a basic introductory course for teachers. During the 1967 summer session, extensive work in microteaching was introduced in the master-of-arts-in-teaching programs. Wayne State's Teacher Corps Project used video equipment for microteaching and self-appraisal.

Microteaching has also been used in in-service teacher education. The Far West Laboratory for Educational Research and Development has adapted the method to in-service training and called the result a Minicourse.

An article in the London Times Educational Supplement described the Minicourse as a self-contained package of in-service training material designed to improve teachers' classroom performance in only four days. The article outlined the following sequence:

First, an introductory film is shown, demonstrating the microteaching approach and its advantages. The next day the teacher completes a practice lesson and then views a 15-minute instructional film. This describes three specific techniques the teacher can use to increase pupil responses during discussion. Then he is shown another film in which a master teacher demonstrates the techniques discussed in the first film. The teacher is then

asked to develop a lesson on his own, based on his current school work, using what he has learned from both films.

The teacher undertakes his first venture in microteaching on the third day. He conducts the lesson he has planned with five to eight of his own students under the eye of the videotape camera. Later, in private, he plays the videotape of his first performance and gets a general impression. Then he plays the tape a second time to judge his specific accomplishments in the light of the three specific teaching skills he has learned. After this, he replans his lesson in readiness for the next microteaching session. On the fourth day he reteaches the lesson with a different group of his pupils. He views the playback twice more for general and specific techniques. Then he meets with another teacher in the microteaching course. Both view the third replay of the tape and discuss it for mutual improvement.

Findings from the Survey

The number of NCATE-accredited colleges and universities which reported using microteaching techniques in their secondary education departments during the 1968-69 academic school year is listed by state and territory in Table 1.

Sixty-six institutions incorporated microteaching techniques in as many as two or three courses. For clarification purposes, the eight required education courses are listed separately in Table 2 to determine in which courses microteaching was most often used. Seventy-two percent reported using it in the general methods courses, 43 percent reported using it in the subject methods courses, 18 percent in the student teaching courses, 7 percent in the fifth-year graduate programs, 6 percent in the instructional media courses, and 1 percent in a separate microteaching course.

Table 3 lists the number of institutions which used microteaching in one, two, or three courses in the order of the most common course or course combination. Fifty-four percent used microteaching in one course only, the most common being the general methods course with 30 percent of the total. Thirty-six percent used it in two courses, the most common course combination being subject methods and general methods with 15 percent of the total. Ten percent used it in three courses, the most common combination being subject methods, general methods, and student teaching.

TABLE 1

Number of NCATE-Accredited Institutions of Higher Education Using Microteaching in Secondary Education

State or Territory	Number of Institutions	State or Territory	Number of Institutions
Alabama	2	Montana	0
Arizona	2	Nebraska	7
Arkansas	1	Nevada	0
California	6	New Hampshire	0
Colorado	3	New Jersey	0
Connecticut	0	New Mexico	3
Delaware	0	New York	3
District of Columbia	0	North Carolina	1
Florida	1	North Dakota	2
Georgia	1	Ohio	3
Idaho	1	Oklahoma	4
Illinois	8	Oregon	2
Indiana	7	Pennsylvania	5
Iowa	5	Rhode Island	0
Kansas	7	South Carolina	1
Kentucky	4	South Dakota	3
Louisiana	2	Tennessee	3
Maine	2	Texas	7
Maryland	1	Utah	4
Massachusetts	2	Vermont	0
Michigan	3	Virginia	3
Minnesota	8	Washington	2
Mississippi	0	West Virginia	7
Missouri	7	Wisconsin	7
		Wyoming	1
		Total	141

TABLE 2

Number of Institutions Using Microteaching in Various Required Courses[a]

Education Courses	Students in Microteaching Per Semester													
	Fewer than 76 Students		76-150 Students		151-225 Students		226-300 Students		301-375 Students		376 or More Students		Total	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
General Methods	59	26	26	11	9	4	6	3	5	2	8	3	113	72
Subject Methods	31	13	12	5	5	2	6	3	2	1	5	2	61	43
Student Teaching	9	4	7	3	4	2	2	1	2	1	2	1	26	18
5th Yr. Grad. Program	4	2	3	1	1	-	2	1	-	-	-	-	10	7
Foundations of Psychology	4	2	2	1	-	-	-	-	1	-	2	1	9	6
Instructional Media	4	2	3	1	-	-	-	-	1	-	-	-	8	6
Introduction to Education	2	1	1	-	1	-	-	-	-	-	1	-	5	5
Microteaching Course	2	1	-	-	-	-	-	-	-	-	-	-	2	1
Total	115	49	54	23	20	9	16	7	11	4	18	8	234[b]	158

[a]In Tables 2-14 the number of institutions is grouped according to the number of students involved in microteaching per semester. For purposes of this study, semesters, quarters, and summer terms are considered equal.

[b]Sixty-six institutions use microteaching techniques in two or three courses.

TABLE 3

Institutions Using Microteaching in Only One Course or Course Combination

Education Course Combinations	Students in Microteaching Per Semester													
	Fewer than 76 Students		76-150 Students		151-225 Students		226-300 Students		301-375 Students		376 or More Students		Total	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
General Methods	27	19	12	7	4	2	-	-	1	1	1	1	45	30
Subject Methods	15	11	1	1	-	-	1	1	-	-	-	-	17	13
5th Yr. Grad. Program	4	3	2	1	1	1	1	1	-	-	-	-	8	6
Introduction to Education	1	1	1	1	-	-	-	-	-	-	-	-	2	2
Microteaching Course	1	1	-	-	-	-	-	-	-	-	-	-	1	1
General & Subject Methods	10	7	5	4	1	1	3	2	-	-	2	1	21	15
General & Student Teaching	3	2	3	2	-	-	-	-	-	-	-	-	6	4
General & Psych. Foundations	2	1	-	-	-	-	-	-	1	1	1	1	4	3
General & Inst. Media	2	1	1	1	-	-	-	-	1	1	-	-	4	3

(cont'd. on next page)

TABLE 3 (continued)

Education Course Combinations	Fewer than 76 Students		76-150 Students		151-225 Students		226-300 Students		301-375 Students		376 or More Students		Total	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
Subject & Student Teaching	2	1	1	1	1	1	-	-	-	-	-	-	4	3
Intro. to Ed. & General Meth.	1	1	-	-	1	1	-	-	-	-	1	1	3	3
General & 5th Yr. Grad. Program	-	-	1	1	-	-	1	1	-	-	-	-	2	2
Inst. Media & Student Tchng.	1	1	1	1	-	-	-	-	-	-	-	-	2	2
Subject & Inst. Media	-	-	1	1	-	-	-	-	-	-	-	-	1	1
General, Subject & Student Tchng.	2	1	2	1	3	2	2	1	2	1	2	1	13	7
General, Subject & Psych. Found.	2	1	2	1	-	-	-	-	-	-	1	1	5	3
Total	76	53	33	23	11	8	8	6	5	4	8	6	141	100

The most common method of modification to facilitate incorporating microteaching techniques is to condense the course content to provide for it during the course time; 67 percent of the institutions reported using this method. Five percent reported the addition of laboratory time to the course, 23 percent stated that the course content was condensed and laboratory time was added, 3 percent provided a separate summer microteaching program, and 2 percent provided a separate course in microteaching during the school year. Table 4 presents this information.

The majority of the institutions using microteaching had used it for two years or less at the time of the survey in 1968-69 (Table 5). Twenty-five percent of the respondents reported using microteaching for one year or less, 48 percent for two years, 14 percent for three years, 7 percent for four years, 4 percent for five years, and 2 percent for six or more years.

Table 6 shows that 24 percent of the colleges and universities using microteaching techniques always used the complete teach-critique, reteach-critique cycle, 49 percent used the reteach-critique phase of the cycle part of the time, and 27 percent never used the reteach-critique phase of the cycle.

The number of institutions using various numbers of microteaching encounters in which each student participates is shown in Table 7. An analysis of this table shows that 66 percent of the programs involved 150 or fewer students in microteaching, and these students experienced six or fewer teaching encounters. The remaining 34 percent had microteaching programs which involved more students, more teaching encounters, or both.

Table 8 shows that 626 faculty members, 340 graduate assistants, and 248 audiovisual technicians were involved in the microteaching programs. This table also shows that the mean number of faculty members in all the programs was 4.4; graduate assistants, 2.4; and audiovisual technicians, 1.8.

TABLE 4

Institutions Reporting Various Methods of Incorporating Microteaching into the Curriculum

Methods for Incorporating Microteaching	Students in Microteaching Per Semester													
	Fewer than 76 Students		76-150 Students		151-225 Students		226-300 Students		301-375 Students		376 or More Students		Total	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
Condensed Course to Include Micro-teaching During Course Time	53	37	22	16	9	7	6	4	3	2	2	1	95	67
Added Laboratory Time to Course	4	3	1	1	-	-	-	-	-	-	1	1	6	5
Condensed Course and Added Laboratory Time	14	10	8	6	2	1	3	2	1	1	5	3	33	23
Added a Separate Summer Micro-teaching Program	3	2	1	1	-	-	-	-	-	-	-	-	4	3
Added a Separate Course of Micro-teaching During School Year	2	1	1	1	-	-	-	-	-	-	-	-	3	2
Total	76	53	33	25	11	8	9	6	4	3	8	5	141	100

TABLE 5

Institutions Reporting the Number of Years Microteaching Has Been Used

Number of Years	Students in Microteaching Per Semester													
	Fewer than 76 Students		76-150 Students		151-225 Students		226-300 Students		301-375 Students		376 or More Students		Total	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
1 Year	22	16	8	6	2	1	3	2	1	1	-	-	36	25
2 Years	36	25	17	12	5	3	4	3	-	-	6	4	68	48
3 Years	12	9	2	1	3	2	-	-	2	1	1	1	20	14
4 Years	2	1	4	3	-	-	1	1	1	1	1	1	9	7
5 Years	2	1	1	1	1	1	1	1	-	-	-	-	5	4
6 or More Years	2	1	1	1	-	-	-	-	-	-	-	-	3	2
Total	76	53	33	24	11	7	9	7	4	3	8	6	141	100

TABLE 6

Institutions with Microteaching Programs That Use the Complete Teach-Critique Reteach-Critique Cycle

Teach-Reteach Cycle	Students in Microteaching Per Semester													
	Fewer than 76 Students		76-150 Students		151-225 Students		226-300 Students		301-375 Students		376 or More Students		Total	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
Always Reteach	17	12	7	5	2	2	2	2	1	1	2	2	32	24
Sometimes Reteach	35	24	16	11	5	3	7	5	3	2	6	4	71	49
Never Reteach	24	17	10	7	4	3	-	-	-	-	-	-	38	27
Total	76	53	33	23	11	8	9	7	4	3	7	6	141	100

TABLE 7

Institutions Using Various Numbers of Microteaching Encounters in Which Each Student Participates

Microteaching Encounters	Students in Microteaching Per Semester													
	Fewer than 76 Students		76-150 Students		151-225 Students		226-300 Students		301-375 Students		376 or More Students		Total	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
1 - 2	27	19	16	11	4	3	2	1	2	1	2	1	51	36
3 - 4	23	16	11	7	2	1	4	3	-	-	2	1	42	28
5 - 6	14	10	4	3	1	1	1	1	-	-	-	-	19	15
7 - 8	4	3	-	-	-	-	1	1	1	1	2	1	8	6
9 - 10	4	3	-	-	1	1	-	-	-	-	-	-	5	4
11 - 12	-	-	1	1	1	1	-	-	1	1	1	1	4	4
13 - 14	1	1	1	1	-	-	-	-	-	-	-	-	2	2
15 - 16	1	1	-	-	1	1	1	1	-	-	-	-	3	3
17 - 18	2	1	-	-	-	-	-	-	-	-	-	-	2	1
19 - 20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21 - 22	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[illegible] - 24	-	-	-	-	1	1	-	-	-	-	-	-	1	1
Total	76	54	33	23	11	9	9	7	4	3	8	4	141	100

TABLE 8

Number of Staff Personnel Involved in the Microteaching Programs

Personnel	Students in Microteaching Per Semester						
	Fewer than 76 Students	76-150 Students	151-225 Students	226-300 Students	301-375 Students	376 or More Students	Total
Faculty							
Number	161	134	110	52	40	129	626
Average	2.1	4.0	10.0	5.8	10.0	16.1	4.4
Graduate Assistants							
Number	61	82	23	127	14	33	340
Average	.8	2.5	2.1	14.0	3.5	4.1	2.4
AV Technicians							
Number	80	53	25	26	27	37	248
Average	1.0	1.6	2.3	3.0	9.0	4.6	1.8

Ninety percent of the respondents videotaped the microteaching sessions part of the time; 59 percent reported using videotape recording more than 75 percent of the time (Table 9). Twenty percent audiotaped the microteaching part of the time, and 5 percent used audiotape more than 75 percent of the time. Thirty-four percent of the respondents indicated that they did not record the microteaching part of the time.

Personnel who were present and commented on the performance during the critique of the tape replay are shown in Table 10. In 60 percent of the institutions, the college student, his supervising professor, and the pupils of his microclass were all active in the critique; in 31 percent, only the student and his supervisor were active in the critique; in 3 percent, the student and his microclass pupils were involved in the critique; in 2 percent, only the supervisor and the microclass pupils were present and commented on the tape replay; in 2 percent, only the supervising professor reviewed the tape replay, and in another 1 percent, only the student critiqued the tape replay.

Only 12 percent of the reporting programs used real pupils for the microclass more than 75 percent of the time; 52 percent used peer students more than 75 percent of the time, as shown in Table 11.

Only 25 percent of the survey group reported using four pupils in each microclass; 4 percent reported using less than four pupils; 25 percent, five pupils; 14 percent, six pupils; and 1 percent, seven pupils. The remaining 31 percent used eight to more than 20 pupils per microclass (Table 12).

The amount of time microteaching is conducted in the education department, the audiovisual department, the campus school, or the public schools is reported in Table 13. The majority, 56 percent, of the microteaching programs were conducted in the education department more than 75 percent of the time; 8 percent in the audiovisual department more than 75 percent of the time; another 8 percent in the campus schools more than 75 percent of the time; and 4 percent in the public schools more than 75 percent of the time.

TABLE 9

Institutions Using Various Recording Techniques in Microteaching

Recording Techniques	Percent of Time Used	Students in Microteaching Per Semester: Fewer than 76 Students Number of Inst.	76-150 Students Number of Inst.	151-225 Students Number of Inst.	226-300 Students Number of Inst.	301-375 Students Number of Inst.	376 or More Students Number of Inst.	Total Number of Inst.	Total Percent
Videotaped	100-76	44	15	9	8	5	2	82	59
	75-51	8	1	2	-	-	1	12	8
	50-26	7	8	2	1	-	-	18	13
	25-0	8	2	-	1	-	3	14	10
Audiotaped	100-76	3	2	-	-	-	2	7	5
	75-51	2	-	-	-	-	-	2	2
	50-26	2	2	-	1	-	-	5	3
	25-0	7	2	2	-	1	2	14	10
Not Taped	100-76	8	2	-	1	-	1	12	8
	75-51	5	2	1	-	-	1	9	6
	50-26	7	6	1	-	-	-	14	10
	25-0	6	2	2	2	-	2	14	10

TABLE 10

Institutions in Which Selected Personnel Were Involved in the Microteaching Critique During the Tape Replay

Personnel	Students in Microteaching Per Semester													
	Fewer than 76 Students		76-150 Students		151-225 Students		226-300 Students		301-375 Students		376 or More Students		Total	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
College Student	2	1	-	-	-	-	-	-	-	-	1	1	3	2
College Student and College Supervisor	22	15	11	8	8	6	2	1	-	-	2	1	45	31
College Student, College Supervisor, Pupils of Micro-class	48	34	18	13	3	2	7	5	3	2	5	4	84	60
College Student, Pupils of Micro-class	1	1	2	1	-	-	-	-	1	1	-	-	4	3
College Super-visor	1	1	1	1	-	-	-	-	-	-	-	-	2	2
College Super-visor and Pupils of Microclass	2	1	1	1	-	-	-	-	-	-	-	-	3	2
Total	76	53	33	24	11	8	9	6	4	3	8	6	141	100

TABLE 11

Institutions According to Percentage of Time
Pupils of the Microclass Are Peer or Real Pupils

		Students in Microteaching Per Semester							
		Fewer than 76 Students	76-150 Students	151-225 Students	226-300 Students	301-375 Students	376 or More Students	Total	
Pupils of the Microclass	Percent of Time	Number of Inst.	Number of Inst.	Number of Inst.	Number of Inst.	Number of Inst.	Number of Inst.	Number of Inst.	Percent
Peer Pupils	100-76	44	19	3	4	3	2	73	52
	75-51	2	3	1	2	1	2	11	10
	50-26	9	1	2	2	1	2	17	12
	25-0	8	2	-	1	-	-	11	10
Real Secondary Pupils	100-76	14	4	2	1	-	-	17	12
	75-51	5	1	1	1	-	-	8	6
	50-26	17	3	3	2	1	4	30	21
	25-0	10	9	4	6	2	1	32	23

TABLE 12

Institutions Reporting the Number of Pupils in the Microclass

Number of Pupils	Students in Microteaching Per Semester													
	Fewer than 76 Students		76-150 Students		151-225 Students		226-300 Students		301-375 Students		376 or More Students		Total	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
1 - 3	4	3	-	-	1	1	-	-	-	-	-	-	5	4
4	19	13	8	5	4	3	2	1	3	2	1	1	37	25
5	15	13	10	7	3	2	3	2	1	1	3	2	35	25
6	13	9	3	2	1	1	2	1	-	-	2	1	21	14
7	-	-	1	1	-	-	-	-	-	-	-	-	1	1
8	3	2	2	1	-	-	-	-	-	-	1	1	6	4
9 - 10	8	6	1	1	-	-	-	-	1	1	1	1	11	9
11 - 15	5	3	3	2	2	1	-	-	-	-	-	-	10	6
16 - 20	2	1	1	1	-	-	1	1	-	-	-	-	4	3
More than 20	7	5	4	3	-	-	1	1	-	-	-	-	12	9
Total	76	53	33	23	11	8	9	6	4	4	8	6	141	100

TABLE 13

Institutions Reporting the Percentages of Time Microteaching Is Conducted in the Education Department, Audiovisual Department, Campus School, or Public Schools

		Students in Microteaching Per Semester							
		Fewer than 76 Students	76-150 Students	151-225 Students	226-300 Students	301-375 Students	376 or More Students	Total	
Micro-teaching Station	Percent of Time	Number of Inst.	Number of Inst.	Number of Inst.	Number of Inst.	Number of Inst.	Number of Inst.	Number of Inst.	Percent
Education Department	100-76	43	20	4	7	4	2	79	56
	75-51	3	4	3	-	-	-	10	7
	50-26	7	4	1	-	-	1	13	9
	25-0	3	1	-	2	-	3	9	6
Audio-visual Department	100-76	7	2	1	1	-	-	11	8
	75-51	1	-	-	-	-	-	1	1
	50-26	4	2	-	-	-	-	6	4
	25-0	3	1	2	1			7	5
Campus School	100-76	8	-	1	1	1	-	11	8
	75-51	1	-	-	-	-	1	2	1
	50-26	-	1	-	-	-	1	2	1
	25-0	1	1	-	-	-	1	3	2
Public School	100-76	3	1	-	1	-	1	6	4
	75-51	2	2	-	-	-	-	4	3
	50-26	5	3	2	-	-	-	10	7
	25-0	4	2	3	1	-	-	10	7

Microteaching programs which involved fewer than 76 students had an average of 1.8 videotape recording units; those with between 76 and 150 students had an average of 2.7 VTR units; those with between 151 and 225 students had an average of 4 units; and those with between 226 and 300 students had an average of 5.7 units (Table 14).

The respondents were asked to rank by importance the technical skills of teaching which were applicable to their microteaching program. Eighty-five educators ranked some or all of the technical skills; 56 did not complete this part of the questionnaire because it did not apply to their program.

A four-point scale with four as the highest rank and one as the lowest rank was used. Table 15 shows the ranking of each technical skill of teaching. The five highest skills were: "probing questions" with a rank of 3.5, "reinforcement" and "asking questions," both ranked at 3.4, "higher-order questions" at 3.3, and "establishing set" at 3.2. The remaining skills were ranked steadily lower. The three lowest were: "redundancy and repetition" with a rank of 2.3, "cueing" at 2.1, and "lecturing" at 1.6.

The participating respondents were asked to indicate which technical skills their students used in the teach and/or teach-reteach cycle of microteaching. Fifty-one percent completed this part of the questionnaire, and 49 percent indicated it was not applicable to their program.

Table 16 reveals which technical skills were most often used in the teach and/or teach-reteach cycle. Fifty-one percent of the institutions responding to this question used "asking questions" in the teach and/or teach-reteach cycle, 48 percent used "establishing set" and "reinforcement," 41 percent used "use of examples," and 40 percent used "varying the stimulus." The remaining skills were used in steadily less frequent numbers. The three least frequently used were: "completeness of communication," used by 25 percent of the institutions, "redundancy and repetition," and "cueing," used by 23 percent.

TABLE 14

Institutions Reporting Numbers of Videotape Recording Units Used in Each Microteaching Program

Number of VTR Units	Students in Microteaching Per Semester						
	Fewer than 76 Students	76-150 Students	151-225 Students	226-300 Students	301-375 Students	376 or More Students	Total
0	10	3	-	-	-	-	13
1	30	4	-	-	1	-	35
2	20	10	1	1	1	2	35
3	6	10	4	2	-	1	23
4	3	2	4	2	1	2	14
5	5	1	1	-	1	-	8
6	2	1	-	1	-	-	4
7	-	1	-	1	-	-	2
8	-	-	-	-	-	1	1
9	-	-	-	1	-	-	1
10	-	1	1	-	-	-	2
Total	76	33	11	9[a]	4	8[b]	141
Average No. VTR Units	1.8	2.7	4.0	5.7	3.0	12.1	3.1

[a]One respondent in the 226-300 student category reported using 13 videotape recording units.

[b]Two respondents in the 376 or More student category reported using 29 and 45 videotape recording units.

TABLE 15

Rank of Importance Attached to Each Technical Skill[a]

Technical Skills	4 Number of Inst.	3 Number of Inst.	2 Number of Inst.	1 Number of Inst.	No Comment	Average Rank
Probing Questions	44	22	3	3	69	3.5
Reinforcement	50	21	8	5	57	3.4
Asking Questions	46	20	10	3	62	3.4
Higher-Order Questions	38	23	5	6	69	3.3
Establishing Set	51	20	6	8	56	3.2
Recognizing & Obtaining Attending Behavior	24	29	14	2	72	3.1
Providing Feedback	31	22	11	8	69	3.0
Use of Examples	17	31	24	2	67	3.0
Divergent Questions	26	23	11	4	77	3.0
Student-Initiated Questions	18	30	15	5	73	3.0
Completeness of Communication	20	24	9	10	78	3.0
Frames of Reference	26	20	6	8	81	3.0
Varying the Stimulus	23	24	19	4	71	2.9
Closure	28	25	20	4	64	2.8
Silence & Nonverbal Cues	14	22	16	11	78	2.8
Control of Participation	14	31	19	8	69	2.7
Redundancy & Repetition	4	20	28	12	77	2.3
Cueing	5	15	30	17	74	2.1
Lecturing	3	6	20	42	70	1.6

[a]Ranking Code: 4--Most Important, 3--Very Important, 2--Average Importance, 1--Least Important, No Comment.

TABLE 16

Number of Microteaching Programs That Use Each Technical Skill in the Initial Teach and/or the Teach-Reteach Cycle

Technical Skills	Teach Only		Teach Reteach		No Comment		Total Teach and/or Reteach	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
Asking Questions	29	20	43	30	69	49	72	51
Establishing Set	28	20	39	28	74	52	67	48
Reinforcement	33	23	35	25	73	52	68	48
Use of Examples	29	20	29	20	83	59	58	41
Varying the Stimulus	26	18	31	22	84	60	57	40
Closure	28	20	26	18	87	61	54	39
Providing Feedback	27	19	25	18	89	62	52	38
Probing Questions	23	16	29	20	89	62	52	38
Recognizing & Obtaining Attending Behavior	24	17	24	17	93	66	48	34
Control of Participation	31	22	16	11	94	66	47	34
Higher-Order Questions	19	13	28	20	94	66	47	34
Frames of Reference	26	18	19	13	96	68	45	32
Lecturing	26	18	18	12	97	69	44	31
Student-Initiated Questions	25	18	17	12	99	70	42	30
Divergent Questions	19	13	19	13	103	73	38	27
Silence & Nonverbal Cues	18	12	19	13	104	74	37	26
Completeness of Communication	18	12	17	12	106	75	35	25
Redundancy & Repetition	20	14	13	9	108	77	33	23
Cueing	17	12	16	11	108	77	33	23

As shown in Table 17, only 33 percent of the institutions had written rationale, videotaped models, or filmed models for any of the technical skills. Thirty-three percent had written rationale or models for the technical skill "establishing set," 32 percent had rationale or models for "reinforcement and closure," 30 percent for "asking questions," and 26 percent for "probing questions." At the bottom of the list were "redundancy and repetition," for which 12 percent had some kind of model, and "student-initiated questions" and "completeness of communication," for which 10 percent had a model.

Answers to an open-ended question asking what changes were observed in the attitudes of students toward education as a result of using microteaching techniques are ranked in Table 18. Forty-one respondents felt their students had a greater understanding of the teaching process as a complex and challenging profession, 36 observed a greater interest and enthusiasm toward education in their students, 35 noted an increased self-confidence, 28 felt their students had a greater concern for self-improvement and self-evaluation, and 20 observed a greater awareness of the teacher image in their students. Only one respondent stated that his students felt the microteaching setting was "phoney."

The respondents were also asked what changes they noticed in their own attitude, teaching, or supervision as a result of using microteaching techniques. Table 19 shows that 35 indicated they increased their focus of attention and teaching on specific teaching behaviors, 31 reported they became a better model of good teaching as they had to practice what they preached, 23 felt they became more objective toward teaching and more practical than theoretical, 21 placed more emphasis on student participation and less on lecture, and 18 reported an increase in self-evaluation of their own teaching behaviors.

Table 20 lists the responses to a question pertaining to training programs for staff members in the use of microteaching techniques. Sixty-three respondents reported that staff members were trained through in-school demonstrations, discussions, and participation. Fifty-one indicated that staff members learned the techniques through workshop attendance.

TABLE 17

Microteaching Programs That Have Written Rationale, Videotaped Models, or Filmed Models for Each Technical Skill

Technical Skills	Written Rationale		Video-taped Model		Filmed Model		No Comment	
	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent	Number of Inst.	Percent
Establishing Set	33	23	12	8	3	2	93	67
Reinforcement	33	23	11	7	3	2	94	68
Closure	32	23	11	7	3	2	95	68
Asking Questions	30	21	8	5	6	4	97	70
Probing Questions	23	16	10	7	5	3	103	74
Use of Examples	19	13	12	8	5	3	105	76
Varying the Stimulus	24	17	8	5	2	1	107	77
Frames of Reference	23	16	8	5	2	1	108	78
Recognizing & Obtaining Attending Behavior	23	16	6	4	2	1	110	79
Providing Feedback	20	14	9	6	2	1	110	79
Higher-Order Questions	21	15	4	3	3	2	113	80
Silence & Nonverbal Cues	17	12	6	4	5	3	113	81
Control of Participation	16	11	10	7	1	1	114	81
Lecturing	15	10	8	5	3	2	115	83
Divergent Questions	14	10	3	2	4	3	120	85
Cueing	13	9	4	3	2	1	122	87
Redundancy & Repetition	12	8	4	3	2	1	123	88
Student-Initiated Questions	10	7	4	3	3	2	124	88
Completeness of Communication	10	7	3	2	2	1	126	90

TABLE 18

Institutions Reporting Various Observed Changes
in Student Attitude Toward Education as a Result of Microteaching

Rank Order	Times Mentioned
1--Greater understanding of the teaching process as a complex challenging profession.	41
2--Greater interest and enthusiasm toward education.	36
3--Increased self-confidence.	35
4--Greater concern for self-improvement and self-evaluation.	28
5--Greater awareness of teaching image.	20
6--Greater awareness of specific skills in teaching.	18
7--Feel better prepared for teaching.	17
8--Healthier attitude toward criticism.	16
9--Feel that microteaching is most relevant.	15
10--Greater enjoyment in education.	14
11--Greater awareness of verbal and nonverbal interaction.	12
12--Decreased anxiety.	11
13--Greater awareness of importance of objectives and planning.	5
14--Greater awareness of individual differences.	4
15--More tolerant of others' errors.	3
16--Greater humility.	2
17--Feel that the microteaching setting is phoney.	1

TABLE 19

Institutions Reporting Various Changes in Teaching Behavior, Supervision, and Attitudes of Professors as a Result of Using Microteaching

Rank Order	Times Mentioned
1--Increased focus of attention and teaching on specific teaching behaviors.	35
2--Have become a better model of good teaching, practice what is preached.	31
3--Increased objectivity toward teaching, much more practical than theoretical.	23
4--Place more emphasis upon student participation and less on lecture in own teaching behaviors.	21
5--Much more self-evaluation of own teaching behaviors.	18
6--Increased efficiency in supervision.	16
7--More enthusiastic toward teaching.	9
8--Greater empathy for preservice teachers and beginning teachers.	8
9--More poised and self-confident.	7
10--Greater reliance on student self-evaluation.	6
11--Greater feeling of accomplishment.	4
12--Increased awareness of value in the use of audiovisual aids.	1

Thirty-nine reported training by individual reading, self-instruction, and experimentation. Nine conducted a workshop for faculty and/or public school teachers, and seven conducted a workshop for new staff members at the beginning of the school year.

Table 21 reveals that educators from 54 colleges and universities have contributed directly to the use of microteaching techniques in the in-service education of the state in which they are located.

TABLE 20

Institutions Reporting Various Training Programs
for Staff Members in the Use of Microteaching Techniques

Rank Order	Times Mentioned
1--In-school demonstrations, discussions, and participation.	63
2--Workshop attendance.	51
3--Individual reading, self-instruction, and experimentation.	39
4--Conduct workshop for faculty and/or public school teachers.	9
5--Microteaching workshop for new staff members at beginning of the school year.	7
6--Audiovisual department instructs interested faculty in the use of microteaching.	6
7--Outside consultants have been brought in.	3
8--Series of training sessions on microteaching for faculty during school year.	1

Notes on Research Reviewed

Because of space limitations, and because the studies are available elsewhere, only the most salient features of the microteaching research reviewed from the original paper will be presented here. They are as follows:

Microteaching enables students to concentrate on a specific teaching skill and to develop that competency (Webb & Baird, 1967). Teachers trained in the use of technical skills are viewed by their pupils as being significantly more effective teachers, and their pupils achieve significantly higher than those exposed to teachers not trained in technical skills (Aubertine, 1964; Schuck, 1969).

TABLE 21

Institutions Which Have Contributed Directly to the Use of Microteaching Techniques in In-Service Education in Each State

State or Territory	Number of Inst. Contributing In-Service	Percent of Reporting Inst.	State or Territory	Number of Inst. Contributing In-Service	Percent of Reporting Inst.
Alabama	0	0	Montana	0	0
Arizona	2	100	Nebraska	2	29
Arkansas	0	0	Nevada	0	0
California	3	50	New Hampshire	0	0
Colorado	1	33	New Jersey	0	0
Connecticut	0	0	New Mexico	0	0
Delaware	0	0	New York	0	0
District of Columbia	0	0	North Carolina	0	0
Florida	1	100	North Dakota	1	50
Georgia	1	100	Ohio	0	0
Idaho	0	0	Oklahoma	0	0
Illinois	4	50	Oregon	0	0
Indiana	3	43	Pennsylvania	1	20
Iowa	2	40	Rhode Island	0	0
Kansas	4	57	South Carolina	1	100
Kentucky	1	25	South Dakota	2	67
Louisiana	0	0	Tennessee	3	100
Maine	0	0	Texas	2	29
Maryland	1	100	Utah	4	100
Massachusetts	1	50	Vermont	0	0
Michigan	1	33	Virginia	0	0
Minnesota	3	38	Washington	1	50
Mississippi	0	0	West Virginia	3	43
Missouri	2	29	Wisconsin	3	43
			Wyoming	1	100
Total				54	

Videotaped recordings and feedback are feasible and effective adjuncts to supervisory conferences with novice teachers in helping them analyze and change their teaching behaviors (Acheson, 1964). Several studies have shown that viewing a filmed or videotaped model with a supervisor who provided discrimination training in the modeled performance is very effective in producing desired teacher behaviors (Stromquist, 1965; Orme, 1966; Allen, Berliner, McDonald, & Sobol, 1967; Claus, 1968; Young, 1969).

Steinback (1968) demonstrated that practice with peer students or real pupils as pupils of the microclass makes little difference except for specific interaction and pacing skills.

A survey by Beetner and Johnson (1968) concluded that the majority of students who practice microteaching find the experience rewarding. Students who experienced microteaching in their teacher education program were seen by Davis and Smoot (1969) to have exhibited not only improved but also an increased variety of verbal teaching behaviors.

Several studies show that microteaching warrants consideration as a teaching technique in preservice and in-service education programs (Childs, 1967; Sedgwick & Misfeldt, 1967; Johnson, 1968; Gilliom, 1969). The Far West Laboratory for Educational Research and Development in Berkeley, California, has adapted microteaching to its Minicourses in skills training to be used in in-service training.

Summary and Conclusions

Several of the more pertinent findings revealed in the survey of NCATE-accredited colleges may be summarized and/or commented upon.

Among the 141 colleges and universities using microteaching in the secondary education department, 72 percent used it in the general methods course, 43 percent in the subject methods course, and 18 percent in student teaching. The most common method of incorporating microteaching was to condense the course content to provide for it. Seventy-three percent had used microteaching for only two years or less in 1968-1969. This is very rapid growth in two years.

A quarter of the programs used the complete teach-critique, reteach-critique cycle of microteaching all of the time, about half used the re-teach-critique phase of the cycle only part of the time, and a quarter did not use it.

Two-thirds of the programs involved only 150 or fewer students and provided each student with six or fewer encounters. The remainder had more students, more teaching encounters, or both. Some of the well-established microteaching programs provided a large number of students with many microteaching encounters. The author's opinion, based on experience and on this study, is that an optimum program of microteaching should involve all education students in a minimum of 20 initial teach encounters and 20 reteach encounters during their education program.

Slight more than half of the institutions recorded the microteaching encounters on videotape more than 75 percent of the time, and a small fraction recorded them on audiotape more than 75 percent of the time.

The novice teacher, his supervising professor, and the pupils of his microclass were active in the critique which followed the microlesson in most of the reporting programs, indicating a general acceptance of this combination of personnel in the critique.

Only 12 percent of the reporting institutions used real pupils for the microclass more than 75 percent of the time, while 52 percent used peer pupils more than 75 percent of the time. Eighteen institutions paid the real students for being members of the microclass. The microclass was composed of four or five pupils in half the programs. The number of microclass students in the remaining programs ranged from one to more than 20. Nearly a third of the total used eight or more pupils, which really ceases to be microteaching and becomes demonstration teaching.

A sizable majority of the microteaching programs were conducted in the colleges' education department. A small percentage were conducted in the audiovisual department, or more fortunately, in the less artificial setting of the campus school or public school. In programs with fewer than 76 students, the average number of videotape recording units was 1.8; in programs with between 76 to 150 students, the average number of

VTR units was 2.7; between 151 to 225 students, the average was 4, and between 226 to 300 students, the average was 5.7.

As ranked by the respondents, the five most important technical skills of teaching were: (a) probing questions, (b) reinforcement, (c) asking questions, (d) higher-order questions, and (e) establishing set, in that order. The five technical skills most frequently used in teach-reteach cycle were: (a) asking questions, (b) establishing set, (c) reinforcement, (d) use of examples, and (e) varying the stimulus, in that order. While it is generally agreed that the technical skills are an important component of microteaching, there is a general lack of knowledge about them as evidenced by the fact that only a third of the programs had written rationale or videotaped or filmed models of the skills.

In response to the question, "What changes in attitudes toward education were observed in your students as a result of using microteaching?", respondents felt their students had a greater understanding of the teaching process as a complex and challenging profession, or showed a greater interest and enthusiasm toward education in their students, or displayed an increased self-confidence, or had a greater concern for self-improvement and self-evaluation.

The respondents were also asked what changes they noticed in their own attitude, teaching, or supervision as a result of using microteaching techniques. About a third of those responding to this question indicated they increased their focus of attention and teaching on specific teaching behaviors, another third reported they became a better model of good teaching as they had to practice what they preached, and others felt they became more objective toward teaching, and more practical than theoretical.

Sixty-three respondents reported that staff members were trained in the use of microteaching techniques through in-school demonstrations, discussions, and participation; 51 indicated that staff members learned microteaching techniques through attending workshops; and 39 reported individual reading, self-instruction, and experimentation as the form of training.

Educators from 54 colleges and universities have contributed directly to the use of the microteaching techniques in the in-service education of the state in which they are located.

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APPENDIX A

Technical Skills of Teaching

The following descriptive definitions of the technical skills of teaching are from Microteaching: A Description by Dwight W. Allen and others (1967).

1. Establishing Set: The term set refers to the establishment of cognitive rapport between pupils and teacher to obtain immediate involvement in the lesson. Experience indicates a direct relationship between effectiveness in establishing set and effectiveness in the total lesson. If the teacher succeeds in creating a positive set, the likelihood of pupil involvement in the lesson will be enhanced. For example, one technique for inducing positive set is through the use of analogies that have characteristics similar to the concept, principle, or central theme of the lesson. By training teachers in set induction procedures and having them apply these procedures in microteaching sessions, their subsequent classroom teaching can be significantly improved.

2. Establishing Appropriate Frames of Reference: A student's understanding of the materials of a lesson can be increased if it is organized and taught from several appropriate points of view. A single frame of reference provides a structure through which the student can gain an understanding of materials. The use of several frames of reference deepens and broadens the general field of understanding more completely than is possible with only one. For example, the Emancipation Proclamation becomes more meaningful to the student when it is understood from the frames of reference of the Northern white abolitionist, the Southern white, the Negro slave in the seceded South, the free Negro, the European clothing manufacturer, the political leaders of England, and as an example of the reserve powers of the American President, than if it is simply discussed as the document issued by Lincoln which freed the slaves. Teachers can be trained to become more powerful teachers as they are taught to identify many possible frames of reference that might be used in instruction, to make judicious selection from among them and then to present them effectively.

3. Achieving Closure: Closure is complementary to set induction. Closure is attained when the major purposes, principles, and constructs of a lesson, or portion of a lesson, are judged to have been learned so that the student can relate new knowledge to past knowledge. It is more than a quick summary of the gound covered in a lesson. In addition to pulling together the major points and acting as a cognitive link between past knowledge and new knowledge, closure provides the pupil with a needed feeling of achievement. Closure is not limited to the completion of a lesson. It is also needed at specific points within the lesson so that pupils may know where they are and where they are going.

4. Recognizing and Obtaining Attending Behavior: Teachers can be trained to become more sensitive to the classroom behavior of pupils. The successful experienced teacher, through visual cues, quickly notes indications of interest or boredom, comprehension or bewilderment. Facial expressions, directions of the eyes, the tilt of the head, and bodily posture offer commonly recurrent cues which make it possible for the skilled teacher to evaluate his classroom performance according to the pupil's reactions. He can then change his "pace," vary the activity, introduce new instructional strategies as necessary, and improve the quality of his teaching. Unlike his more experienced counterpart, the beginning teacher has difficulty perceiving and interpreting these visual cues. Through 16mm motion picture films and 35mm still picture protocols of classrooms, and videotape recordings in microteaching sessions, supervisors are able to sensitize teachers to visual cues of pupils' attending and nonattending behavior.

5. Providing Feedback: The feedback process in the training of teachers may be simply stated as providing "knowledge of results." Teachers often ignore the availability of information accessible during the lesson. Questioning, visual cues, informal examination of performance, are immediate sources of feedback. Teachers can be taught appropriate techniques to elicit feedback from students and to modify their lesson accordingly. Teachers unconsciously tap a variety of feedback sources but unless they are sensitized, they tend to rely unevenly on a limited number of students as "indicators" and to rely on a restricted range of feedback cues.

6. Employing Rewards and Punishments (Reinforcement): Reinforcing desired pupil behavior through the use of reward and punishment is an integral part of the teacher's role as director of classroom learning. Substantial psychological evidence confirms the value of reinforcement in the learning process. The acquisition of knowledge of specific techniques of reward and punishment and the development of skills in using them appropriately in specific situations is most important in training a beginning teacher. Experience indicates that teachers can acquire skill through microteaching practice in reinforcement of pupil learning.

7. Control of Participation: Microteaching sessions enable teachers to analyze the kinds of pupil-teacher interaction which characterize their teaching. Control of pupils' participation is one important variable in the successful learning for the pupils. Microteaching sessions provide an opportunity for teachers to practice different techniques for encouraging or discouraging classroom interaction and to gain insight into the causal relationship between a series of teacher-pupil interactions. When a teacher develops the skill to analyze and to control the use of his accepting and rejecting remarks, his positive and negative reactions, his patterns of reward and punishment, he has taken a major step toward effective teaching.

8. Redundancy and Repetition: The purpose of this skill is to clarify and reinforce major ideas, key words, principles, and concepts in a lecture or discussion. The use of redundance and repetition is a

powerful technique in focusing and highlighting important points, and describing them from a different point of view. Improper use of this skill can cause confusion and poor learning among the students, while proper use can direct their attention to points which the teacher wishes to emphasize. There are two main varieties of repetition: (1) literal repetition--using simple, massed, distributed, and accumulative repetition; and (2) figures of speech--metaphors, analogies, verbal emphasis, focusing, gestures, and visual highlighting.

9. Illustrating and Use of Examples: The use of examples is basic to teaching for good, sound, clear teaching. Examples are necessary to clarify, verify, or substantiate concepts. Both inductive and deductive uses of examples can be used effectively by the teacher. Effective use of examples includes: (1) starting with simple examples and progressing to more complex ones; (2) starting with examples relevant to students' experience and knowledge; (3) relating the examples to the principles or ideas being taught; (4) checking to see if the objectives of the lesson have been achieved by asking students to give examples which illustrate the main point.

10. Asking Questions: Prior to the development of probing and higher-order questioning techniques comes the skill of asking questions, period. Too often beginning teachers lecture and tell students rather than asking questions which can elicit the answers from the students themselves. Training techniques have been developed by which teachers can see model videotapes of teachers demonstrating this skill, and by practicing in a microteaching situation increase the number of questions which they ask of students. Having achieved this goal the emphasis can be placed on higher-order questioning techniques.

11. The Use of Higher-Order Questions: Higher-order questions are defined as questions which cannot be answered from memory or simple sensory description. They call for finding a rule or principle rather than defining one. The critical requirements for a "good" classroom question is that it prompts students to use ideas rather than just remember them. Although some teachers intuitively ask questions of high quality, far too many over-emphasize those that require only the simplest cognitive activity on the part of the students. Procedures have been designed to sensitize beginning teachers to the effects of questioning on their students and to provide practice in forming and using higher-order questions.

12. The Use of Probing Questions: Probing requires that teachers ask questions that require pupils to go beyond superficial "first-answer" questions. This can be done in five ways: (1) asking pupils for more information and/or more meaning; (2) requiring the pupil to rationally justify his response; (3) refocusing the pupil's or class's attention on a related issue; (4) prompting the pupil or giving him hints; and (5) bringing other students into the discussion by getting them to respond to the first student's answer.

13. The Use of Divergent Questions: Divergent questions call for the exploration of many possible answers. Rather than have convergence on one set answer, have divergence on many answers. There are no all right or all wrong answers to divergent questions. Emphasis in this skill is placed upon variety and quantity of output. "Brain-storming" is an example of divergent questioning.

14. Teacher Silence and Nonverbal Cues: Many teachers are frightened by silence or pauses in classroom discussion. They usually hasten to fill silence gaps by talking. What many teachers do not realize is that teacher silence is a powerful tool in the classroom. Teacher pausing can be used after: (1) introductory statements to pressure the students into thinking about the teacher's statement; (2) questions to the students to give them time to think about a proper answer; (3) questions from the students to direct the questions to another student with a look or gesture; (4) student response to elicit a continuing response.

15. Student-Initiated Questions: This skill is based upon techniques which produce a discrepant event that provokes students to ask questions of the teacher. These questions can be asked in a twenty-question type of game which keeps student motivation and interest at a high level.

16. Completeness of Communication: Although the importance and need for clear communication is blatant, it is not often the guiding principle in actual communication. Sensitivity training on the importance, and the difficulty, of being understood is the focus of this skill. Several classroom games have been devised which dramatically demonstrate to teachers that what they consider to be clear instructions are often not clear at all to the students. Sensitivity training in the skill of communicating with others will produce teachers who are more responsive to possible miscommunication.

17. Varying the Stimulus Situation: Psychological experiments have shown that deviations from standard, habitual teacher behavior result in higher pupil attention levels. Teachers should be sensitized to their habit patterns and made aware of attention-producing behavior that they, as the stimulus object, can control. The behaviors include teacher movement, gestures, focusing pupil attention, varying the interaction styles, pausing, and shifting sensory channels.

18. Lecturing: Training in some of the successful techniques of lecturing based upon a communications model is the focus for this skill. Delivery techniques, use of audiovisual materials, set induction, pacing, closure, redundancy and repetition, and other skills related to lecturing are included.

19. Pre-Cueing: Pupils are often called on in class to answer questions. Frequently the students do not know the answer and either waste class time talking in circles, or else admit ignorance. If the teacher could cue the student 5 or 10 minutes ahead of when he wants him to answer, the student could prepare himself, thus making a significant contribution to the class. The alerting or cueing of students is a teacher technique which can be used to good purpose in the classroom.

APPENDIX B

NCATE-Accredited Colleges and Universities Responding to the Survey

Alabama

Auburn University
Livingston University

Arizona

Arizona State University
University of Arizona

Arkansas

University of Arkansas

California

California State College, Long Beach
California State College, Los Angeles
Chico State College
Stanford University
University of the Pacific
University of Southern California

Colorado

University of Colorado
University of Denver
Western State College

Florida

University of Miami

Georgia

Georgia Southern College

Idaho

University of Idaho

Illinois

Bradley University
Eastern Illinois University
Greenville College
Illinois State University

Northern Illinois University
University of Chicago
University of Illinois
Western Illinois University

Indiana

Ball State University
DePauw University
Franklin College
Goshen College
Indiana State University
Indiana University
Purdue University

Iowa

Clarke College
Iowa Wesleyan College
University of Northern Iowa
Upper Iowa College
William Penn College

Kansas

Fort Hays Kansas State College
Friends University
Kansas State College
Kansas State Teachers College
University of Kansas
Washburn University
Wichita State University

Kentucky

Morehead State University
Murray State University
University of Kentucky
Western Kentucky University

Louisiana

Northeast Louisiana State College
Northwestern State College

Maine

Farmington State College
University of Maine

Maryland

University of Maryland

Massachusetts

Lowell State College
University of Massachusetts

Michigan

Calvin College
University of Michigan
Wayne State University

Minnesota

College of Saint Teresa
Gustavus Adolphus College
Macalester College
Mankato State College
Moorhead State College
St. Cloud State College
St. Olaf College
University of Minnesota, Duluth

Missouri

Central Missouri State College
Drury College
Fontbonne College
Northwestern Missouri State College
Southwest Missouri State College
University of Missouri, Columbia
University of Missouri, Kansas City

Nebraska

Chadron State College
Concordia College
Peru State College
Union College
University of Nebraska, Lincoln
University of Nebraska, Omaha
Wayne State College

New Mexico

Eastern New Mexico University
New Mexico State University
Western New Mexico University

New York

City College of New York
Hofstra University
State University of New York

North Carolina

Lenoir Rhyne College

North Dakota

Dickinson State College
University of North Dakota

Ohio

Bowling Green State University
University of Akron
University of Cincinnati

Oklahoma

Northwestern State College
Oklahoma College of Liberal Arts
Southwestern State College
University of Tulsa

Oregon

Eastern Oregon College
Lewis & Clark College

Pennsylvania

Lock Haven State College
Millersville State College
Pennsylvania State University
University of Pennsylvania
University of Pittsburgh

South Carolina

University of South Carolina

South Dakota

Black Hills State College
Northern State College
University of South Dakota

Tennessee

East Tennessee State University
Memphis State University
University of Tennessee

Texas

Abilene Christian College
North Texas State University
Southwest Texas State
Stephen F. Austin State College
Texas College of A. and I.
Texas Wesleyan College
The University of Texas

Utah

Brigham Young University
University of Utah
Utah State University
Weber State College

Virginia

Longwood College
University of Virginia
Virginia State College

Washington

Eastern Washington State College
Washington State University

West Virginia

Bluefield State College
Fairmont State College
Marshall University
Shepard College
West Virginia Institute of Technology
West Virginia State College
West Virginia University

Wisconsin

Mount Mary College
Stout State University
Wisconsin State University
University of Wisconsin
Wisconsin State University, LaCrosse
Wisconsin State University, Oshkosh
Wisconsin State University, Platteville

Wyoming

University of Wyoming